L Number	Hits	Search Text	DB	Time stamp
1	4127	alpha near1 ray	USPAT; US-PGPUB; EPO; JPO; DERWENT	2002/03/20 10:16
2	16177	(tin sn) near1 (alloy remain balance balancing rest base based)	USPAT; US-PGPUB; EPO; JPO; DERWENT	2002/03/20 10:18
3	2549	(tin sn) near1 (alloy remain balance balancing rest base based) same (silver Ag)	USPAT; US-PGPUB; EPO; JPO; DERWENT	2002/03/20 10:19
4	1	(tin sn) near1 (alloy remain balance balancing rest base based) same (silver Ag) same (alpha near1 ray)	USPAT; US-PGPUB; EPO; JPO; DERWENT	2002/03/20 10:19

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(FILE 'HOME' ENTERED AT 09:43:38 ON 20 MAR 2002)

FILE 'REGISTRY' ENTERED AT 09:43:46 ON 20 MAR 2002
L1 403 (1<AG<3 AND 90<SN)/MAC

FILE 'HCAPLUS' ENTERED AT 09:44:10 ON 20 MAR 2002
L2 267 L1
L3 240 (SILVER OR AG) AND (TIN OR SN) AND L2
L4 1275144 ALPHA
L5 3 L3 AND L4
L6 853543 RAY
L7 6 L6 AND L3
L8 5 L7 NOT L5
E SHIMIZU KOZO/IN,AU
L9 33 E3-4
E OCHIAI MASAYUKI/IN,AU
L10 30 E3-4
E YAMAGISHI YASUO/IN,AU
L11 100 E3-4
L12 156 L9 OR L10 OR L11
L13 32144 (SILVER OR AG) AND (TIN OR SN)
L14 11 L12 AND L13
L15 232 L3 NOT (L14 OR L5 OR L7)
L16 3 L15 AND BUMP?
L17 229 L15 NOT L16
L18 23 L17 AND SEMICONDUCTOR?

FILE 'ZCA' ENTERED AT 09:56:36 ON 20 MAR 2002

FILE 'HCAPLUS' ENTERED AT 10:09:07 ON 20 MAR 2002
SELECT L18 IPC 2 5 7 18 19 23

FILE 'WPIDS' ENTERED AT 10:09:18 ON 20 MAR 2002
L19 762730 E1-10
L20 428 L19 AND (ALPHA(1A)RAY)
L21 3 L20 AND (TIN OR SN) AND (SILVER OR AG)

AN 2001:748233 HCAPLUS
DN 135:281581
TI Solder alloy for bump contacts, a circuit substrate, a semiconductor device and a method of manufacturing without errors from **alpha** emission
IN Shimizu, Kozo; Ochiai, Masayuki; Yamagishi, Yasuo
PA Japan
SO U.S. Pat. Appl. Publ., 13 pp.
CODEN: USXXCO
DT Patent
LA English
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI US 2001028109	A1	20011011	US 2000-731726	20001208
PRAI JP 2000-44827	A	20000222		

AB The main subject of the present invention is a semiconductor device with a semiconductor element bonded on a circuit substrate by a bump comprising a solder alloy. Here, the solder alloy is an **Sn-Ag** -based alloy having .gtoreq.90 wt.% **Sn** content, a 0.01 or less (cph/cm2) .**alpha**. emitter amt. in **Sn**, and a 1.5-2.8 wt.% **Ag** content. Accordingly, a solder alloy capable of preventing generation of a needle-like projection generated in a solder alloy at the time of bonding a semiconductor element on a circuit substrate for coping with frequent generation of a soft error accompanying the fine pitch, in executing the flip-chip bonding in a Pb-free solder alloy mainly contg. **Sn**, with a long fatigue life without causing deterioration of the insulation resistance, and without generation of a soft error by .**alpha**. rays, and a semiconductor device using the same are realized.

AN 1999:104601 HCAPLUS
DN 130:128685
TI Solders for joining electronic components to substrates
IN Ogashiwa, Toshinori; Arikawa, Takatoshi
PA Tanaka Electronics Industry Co., Japan
SO Jpn. Kokai Tokkyo Koho, 9 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 11033776	A2	19990209	JP 1997-264164	19970929
	TW 391904	B	20000601	TW 1998-87107100	19980508
	US 6160224	A	20001212	US 1998-75951	19980512
	CN 1200316	A	19981202	CN 1998-108955	19980522
PRAI	JP 1997-133802	A	19970523		
	JP 1997-264164	A	19970929		

AB The solders contain Fe 0.01-4.99, Ni 0.01-4.99 but Fe+Ni 0.02-5.0, **Ag** and/or In 0.1-8.0, Pb 0-70%, and balance **Sn**. Elec. components are soldered to the substrates using the solders.

AN 1978:31131 HCAPLUS
DN 88:31131
TI **Semiconductor** device
IN Froloff, Helmut; Tovar, Theodor
PA Semikron Gesellschaft fuer Gleichrichterbau und Elektronik m.b.H., Fed. Rep. Ger.
SO Braz. Pedido PI, 8 pp.
CODEN: BPXXDX
DT Patent
LA Portuguese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	BR 7602045	A	19761005	BR 1976-2045	19760402
	DE 2514922	A1	19761014	DE 1975-2514922	19750405
	DE 2514922	C2	19830127		
	CH 619073	A	19800829	CH 1976-2027	19760219
	GB 1548755	A	19790718	GB 1976-11752	19760324
	US 4005454	A	19770125	US 1976-670826	19760326
PRAI	DE 1975-2514922		19750405		

AB To solve problems arising from the bonding of **semiconductor** devices to the casing or connecting conductors, the following solder materials are used: **Sn** contg. (1) Sb (3-8), Ni(0,1-2%); (2) Sb(3-8), Cu0.1-3), Cd(0.1-2%); (3) **Ag**(1-6), Cd(0.1-2%); Cd contg. (1) Zn(10-25), **Ag**(1-5%); (2) Zn(10-25), **Ag**(5), Cu(3%); Zn contg. Cd(10-25), Cu(0.1-3%); Pb contg. (1) Cd(10-20), Sb(0.3-5%); (2) **Ag**(1-5), **Sn**(0.5-2), Ni(0.1-2), Cu(0.1-3%). The above materials show good wetting properties and are economically convenient for devices handling high charges.

AN 1994-252112 [31] WPIDS
DNN N1994-199100 DNC C1994-114775
TI Solder material emitting less **alpha rays** and solder film for die-bonding silicon chips - or for sealing ceramic packages with metallic or ceramic lids comprises **tin** and/or indium.
DC L03 M23 P55 U11 V04 X24
PA (MITV) MITSUBISHI MATERIALS CORP
CYC 1
PI JP 06182580 A 19940705 (199431)* 6p <--
JP 3227851 B2 20011112 (200174) 7p <--
ADT JP 06182580 A JP 1992-354198 19921215; JP 3227851 B2 JP 1992-354198 19921215
FDT JP 3227851 B2 Previous Publ. JP 06182580
PRAI JP 1992-354198 19921215
AB JP 06182580 A UPAB: 19940921
Solder comprises by wt., 1 - 65% **Sn** and/or 1 - 65% In, opt. contg., if necessary, 1 - 15% Sb and/or 1 - 10% **Ag**, and 10 - 5000 ppm in total of at least one selected from Na, Sr, K, Ga, Cr, Nb, Mn, V, Ta, Si, Zr, and Ba, and balance Pb with unavoidable impurities.

USE/ADVANTAGE - For die-bonding Si chips such as ICs and LSIs to substrates, lead frames, ceramic packages, etc., or for sealing ceramic packages with a metallic or a ceramic lid. The alpha particles are counted as low as 0.5 CPH/cm2 or less.

In an example 99.9995% pure Pb added therein 10% **Sn** and 100 ppm Ba was prepd. the alpha particles counted was as low as 0.02 CPH/cm2. The same result was obtd. on a solder material based on 99.9995% pure Pb added therein 15% In, 2% Sb, 2% **Ag**, and 4,000 ppm V.
Dwg.0/0

AN 1987:218254 HCAPLUS
DN 106:218254
TI **Tin** alloys resistant to thermal shock
IN Morikawa, Masaki; Yoshida, Hideaki; Kuromitsu, Yoshio; Tanaka, Tadaharu
PA Mitsubishi Metal Corp., Japan
SO Jpn. Kokai Tokkyo Koho, 5 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 61269998	A2	19861129	JP 1985-111867	19850524
	JP 04035278	B4	19920610		

AB The O content of a **Sn** alloy solder contg. 1-30% **Ag** and/or 0.5-25% Sb for manuf. of **semiconductor** devices is limited to <5 ppm, and the av. grain size of the alloy to <3 .mu. for peeling prevention at the joints under severe thermal shock conditions. Molten **Sn**-2.7% **Ag** alloy was sprayed at 0.7 kg/cm2 in Ar onto a cooled roll rotating at peripheral speed 15 m/s to produce a 50-.mu. solder film. The film (av. 1.8.mu. grains) contg. 2.1 ppm O was used to solder Al-1% Si and O-free Cu parts. No peeling at the joint was obsd. in 500 heating cycles (300.degree., 10 s/cycle), but peeling occurred after 215 heating cycles at a joint obtained by using a similar rolled solder film contg. 14 ppm O and av. 21-.mu. grains.

AN 1996:39069 HCAPLUS
DN 124:124164
TI Solders and their preparation
IN Kishimoto, Koichi; Kubokawa, Atsushi
PA Tanaka Electronics Ind, Japan
SO Jpn. Kokai Tokkyo Koho, 5 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 07284983	A2	19951031	JP 1994-81853	19940420

AB The solders are **Sn** alloys contg. 5-15 wt.% Sb and 2-15 wt.% **Ag**, or **Sn** alloys contg. 6-11 wt.% Sb and 6-12 wt.% **Ag**, and have tape- or wire-like shape and surface roughness (Ra) .ltoreq.10.mu.m. The solders are prepd. by cold forming. The solders have high ductility at 170.degree., and are suited for joining of members used at high temp., such as **semiconductor** device members.

AN 1996:153958 HCAPLUS
DN 124:239719
TI Composite solders and their manufacture for high-temperature uses
IN Kishimoto, Koichi; Kubokawa, Atsushi
PA Tanaka Electronics Ind, Japan
SO Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 08001372	A2	19960109	JP 1994-129054	19940610

AB The solders consist of solder materials contg. powders, and the solder materials comprise **Sn** alloys contg. 5-15% Sb and 2-15% **Ag**. The process comprises cold-working the solder materials. The solders have high ductility at 170.degree. and cold-workability and are esp. suitable for bonding parts in **semiconductor** devices used at high temp.

AN 1996:468948 HCAPLUS
DN 125:130118
TI **Semiconductor** apparatus and its manufacture
IN Hosoi, Yoshihiro; Masuri, Kenji
PA Kyocera Corp, Japan
SO Jpn. Kokai Tokkyo Koho, 7 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 08125080	A2	19960517	JP 1994-263408	19941027

AB In the app. comprising a **semiconductor** device with a metalized wiring layer, an external lead terminal, solder between the wiring layer and the terminal, and a molding resin; the solder is made of Au-**Sn**-**Ag** alloy or Au-**Sn**-Pd alloy. The solder is formed by (1) forming a Au or Pd coating on metalized wiring surface, (2) forming a **Ag**- or Pd coating layer on the terminal surface, and (3) contacting the wiring layer with the terminal and alloying them. Preferably, the solder is composed of Au 1.0-30.0, **Sn** 55.0-98.0, and **Ag** or Pd 1.0-15.0 wt.%. The elec. connection has high reliability.

AN 1998:293215 HCAPLUS
DN 129:31069
TI Solder and electronic device using it
IN Ogashiwa, toshinori; Arikawa, Takatoshi; Yokosawa, Masami; Aoi, Kazuhiro; Sawata, Ryoji
PA Matsushita Electric Industrial Co., Ltd., Japan; Tanaka Electronics Industry Co.
SO Jpn. Kokai Tokkyo Koho, 10 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 10118783	A2	19980512	JP 1996-275087	19961017
	JP 3226213	B2	20011105		
	EP 847828	A1	19980617	EP 1997-117867	19971015
	EP 847828	B1	20010926		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	CN 1186009	A	19980701	CN 1997-122740	19971017
	CN 1076998	B	20020102		
PRAI	JP 1996-275087	A	19961017		

AB A solder contains 97-99.995% **Sn** and 0.005-3.0% Pd and has a liquidus temp. 200-350.degree.. **Ag**, Ge, P, Zn, Cu, B, Sb, Bi, and In may be present in an amt. of 0.005-2.0%. The solder also may contain 0.001-5.0% particles (20-60 .mu.m) of a metal or an alloy. with a m.p. .gtoreq.400.degree.. An electronic device is manufd. by soldering an electronic element to a substrate with the solder.

AN 1972:29070 HCAPLUS
DN 76:29070
TI Face-down-bonded **semiconductor** devices
IN Tanaka, Shigezo; Minagawa, Katsuji
PA Japan Electric Co., Ltd.
SO U.S., 7 pp.
CODEN: USXXAM
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 3621564	A	19711123	US 1969-822484	19690507
PRAI	JP 1968-31406		19680510		

AB A face-down-bonded **semiconductor** device is described which has elec. connections of high reliability with thermal and chem. stability. In one example, an element has projections of a **Sn-Ag** alloy (96.5 **Sn**-3.5 **Ag**). A substrate is made of Al2O3, and Mo-Mn wiring layers plated with Ni are formed on it. On the end of each wiring layer, a plated **Ag** layer is provided, while to the other end a lead-out wire of an Fe-Ni-Co alloy is connected. The projections are attached to the **Ag** layer by thermocompression bonding or ultrasonic bonding. A cap of Al2O3 ceramic is sealed to the substrate by use of a low-m.p. devitrified glass. The amt. of **Sn** involved in each projection is 4.times.105 .mu.3 and the remaining amt. of **Ag** is 1/30 of this, while each **Ag** layer has a vol. of 6.times.105 .mu.3. In sealing, the assembly is heated to 500.degree.. The projections melt and a considerable amt. of **Ag** mixes with molten **Sn**. The temp. is dropped to 200.degree. to facilitate crystn. or devitrificatio of the glass. A .zeta. solid soln. (m.p. 724.degree.) is sepd. from the molten **Sn** and **Ag** to the amt. of .apprx.30% of the whole. The assembly is reheated to 450.degree. to crystallize or devitrify the glass. Parts of the projection except for the .zeta. solid soln. are again molten, but the element does not move or shift, being supported by parts of the solid soln. After the glass is crystd., the assembly is cooled to ambient. This results in .apprx.50% of the molten parts being sepd. as an .epsilon. solid soln. (m.p. 480.degree.). Although some **Sn** remains not involved in the .zeta. and .epsilon. solid solns., it does not affect the mech. strength of the bonding portions because it resides in spaces of the solid solns. which have grown to bridge the electrodes of the element and the substrate.